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A Thesis

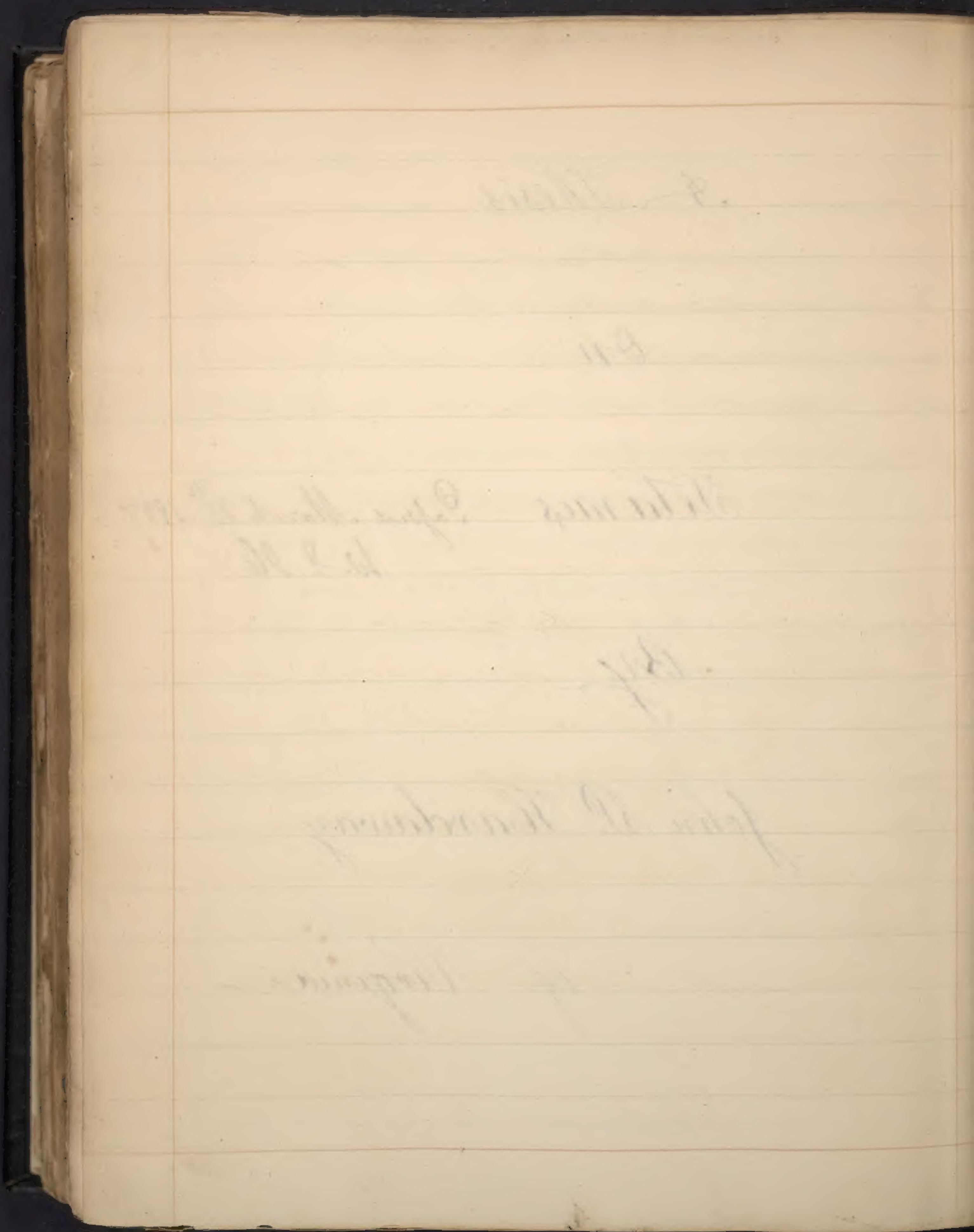
On

Tetanus Dated March 13<sup>rd</sup> 1827  
W. S. H.

By

John P. Hardaway

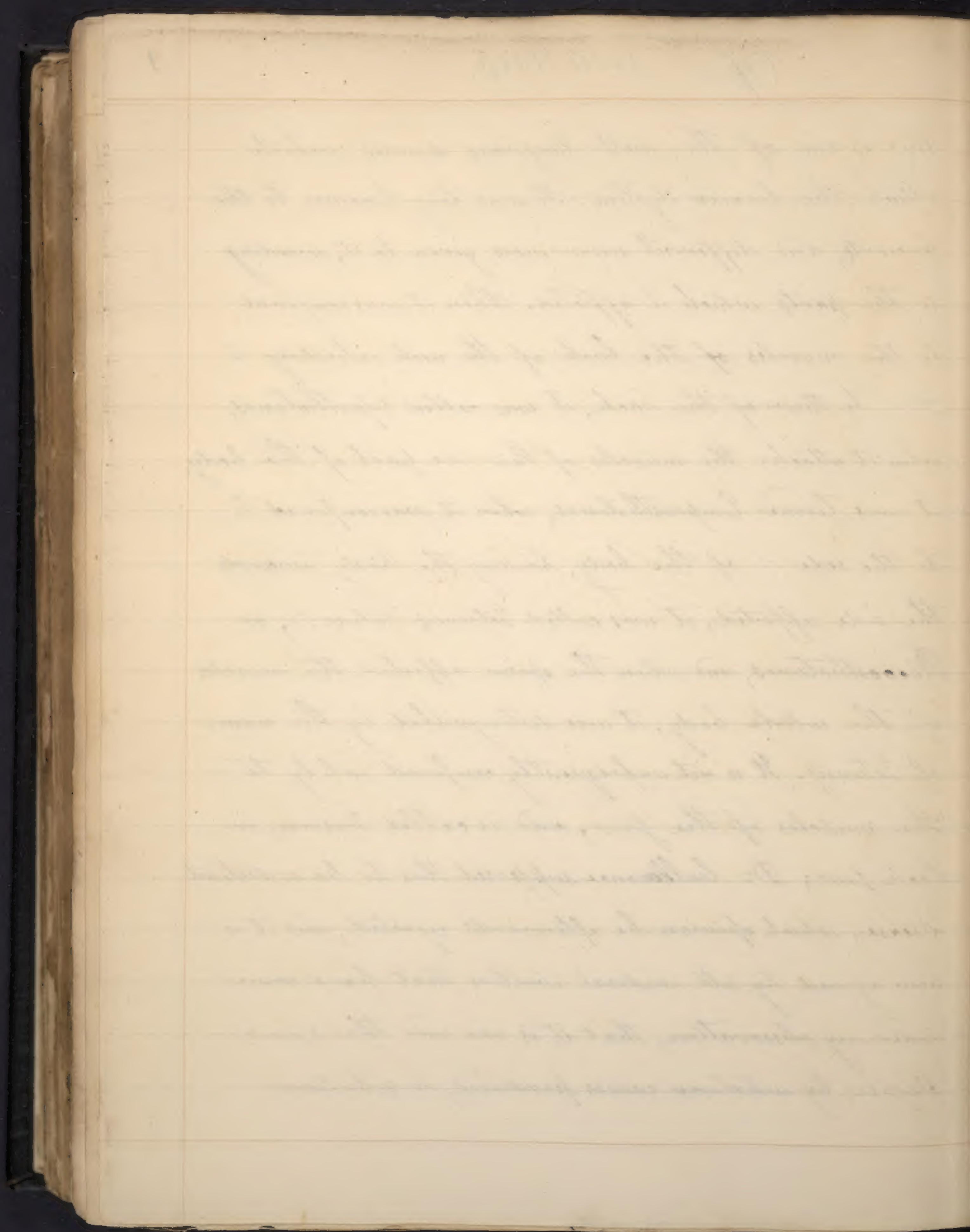
of Virginia. -



## Of Tetany.

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This is one of the most dangerous diseases which attack the human system. It was long known to the ancients, and different names were given to it, according to the parts which it affected. When it was confined to the muscles of the back, of the neck extending down to those of the back, it was called Opisthotonus, when it attacks the muscles of the fore part of the body, it was termed Emprosthotonus, when it was confined to the side of of the body, bending the body towards the side affected, it was called Tetany Lateralis, or Paeopsthotonus, and when the spasms affected the muscles of the whole body, it was distinguished by the name of Tetany. It is not unfrequently confined solely to the muscles of the jaw, and is called Trismus, or Lock jaw; Dr. Cullen once supposed this to be a distinct disease, which opinion he afterwards rejected, and it is now agreed by all medical writers that have come under my observation, that it is one and the same disease, by whatever causes produced, or whatever



muscles are concerned. Tetanus occurs in every climate, but more frequently in the warmest, and in the warmest season of that climate. No age, sex, or temperament is exempt from this dreadful disease; but it attacks persons, of middle age, and those of robust, and plethoric constitutions more frequently than any other, and the male oftener than the female, but why this disease attacks more frequently the male, I am unable to say, unless it is that they are more exposed to the remote and predisposing causes; for we have no proofs of there being any constitutional predisposition in the male, to attacks of this kind. This disease sometimes comes on suddenly and violently, but generally it approaches very gradually.

The symptoms are, at first, a slight stiffness which is perceived in the back part of the neck, and after a short time, the motions of the head become difficult and painful. As the rigidity of the neck comes on and increases, there is commonly at the same time a sense of uneasiness felt about the root



of the tongue, together with some difficulty of swallowing, and a great tightness is perceived about the chest, with a pain at the extremity of the sternum shooting into the back. A stiffness also takes place in the jaws, which soon increases to such a degree, that the <sup>teeth</sup> become closely set together, and will not admit of the smallest separation.

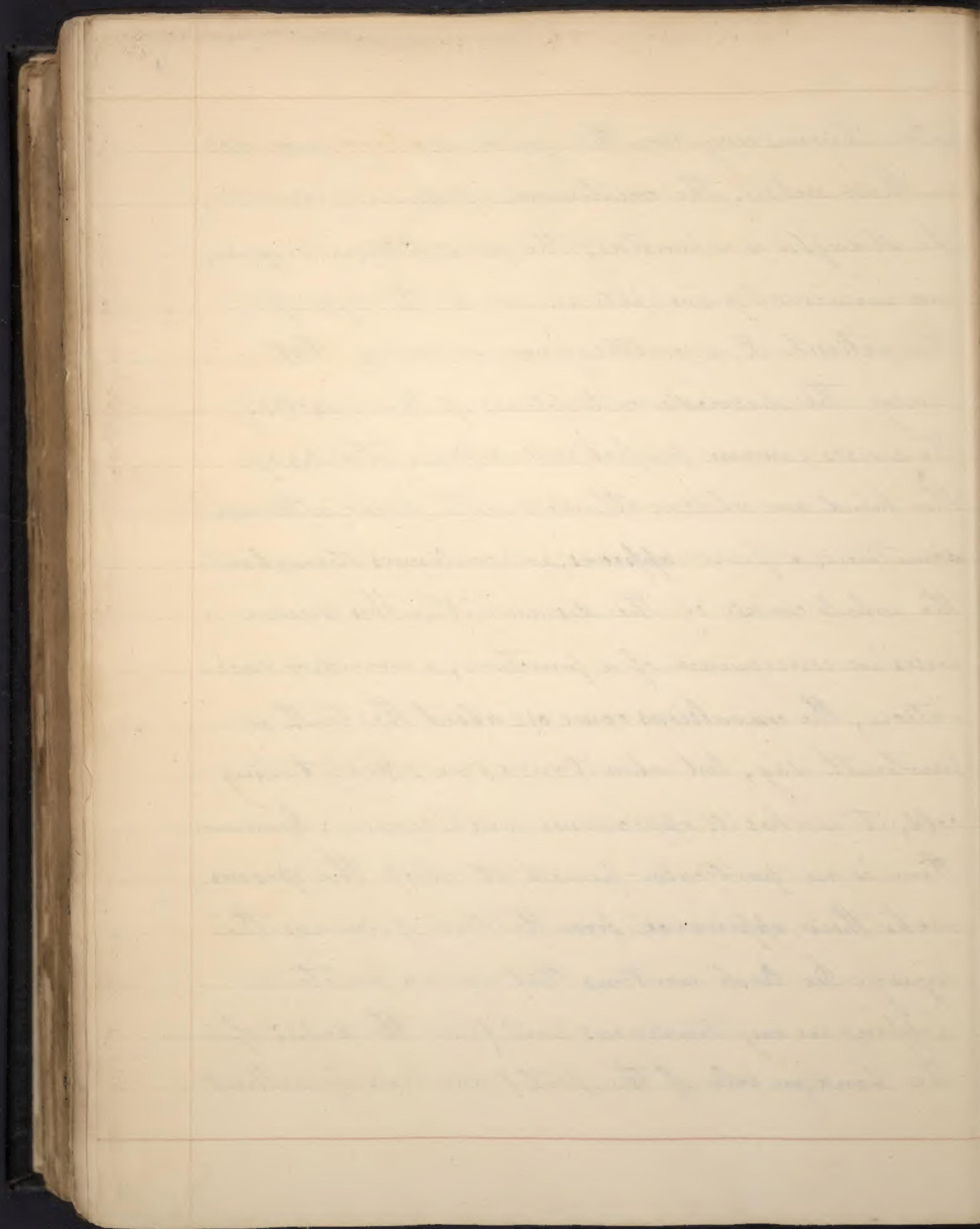
In some cases the spasmodic affection extends no farther; in others the spasms return frequently and are more general, they affect not only the muscles of the neck and jaw, but extend to those of the spine, ~~and~~ bending the body forcibly backwards.

During the whole course of this disease the abdominal muscles are violently affected with spasm, so that the abdomen feels very hard, and most obstinate constipation prevails; both the flexor, and extensor muscles of the lower extremities are convulsed at the same time, so as to keep the limbs rigidly extended.

At the height of this disease every organ of voluntary

the first time I have seen a bird of this species. It was  
a small bird, about 10 cm long, with a dark cap and  
breast, and a light-colored belly. It had a short, dark  
tail and a long, thin beak. It was perched on a branch  
of a tree, looking down at something on the ground.  
I could not tell what it was. The bird was very  
active, flitting from branch to branch and from tree  
to tree. It was a very fast flier, and I could not  
keep up with it. It was a very beautiful bird, and  
I was very happy to see it.

motion becomes irregular, the eyes are rigid and immovable in their sockets, the countenance is horribly distorted, the strength is exhausted, the pulse becomes irregular, and universal spasm puts an end to the life of the patient. It is something very surprising that during the spasmodic contractions of the muscles, the senses remain perfect and entire; attacks of this kind are seldom attended with fever, although sometimes a fever appears, and continues throughout the whole course of the disease. When this disease arises in consequence of a puncture, a wound, or laceration, the convulsions come on about the tenth or fourteenth day, but when it arises from suddenly taking cold, it makes its appearance much sooner; however there is no particular period at which the spasms make their appearance from the time of receiving the injury. Dr Rush mentions that when a puncture happens in any tendinous part (viz the palm of the hand, or sole of the foot) and heals up without



any pain, or inflammation, Tetanus is always to be apprehended. It was once the opinion that when Tetanus arose from punctures or wounds, it would inevitably prove fatal; Dr. Thomas mentions that however we may meet with a necrosis under such circumstances, with a very extensive practice and a large number in the West Indies. The late Professor Bush states, that the man Tetanus is often found mortal. This indeed, from mankind is scarce to confined within the system of the body. So with the animal, it extends to the intestinal system, producing there it gives birth to all the disease, and forms it. Extending, this seems to fatal, probably we may be bound by a strict attention to the symptoms. Then the character and course of the disease are short, and baneful, and at the same time short of very little duration, but immediately removed with violent violence, drawing the patient in the most horrid convulsions.



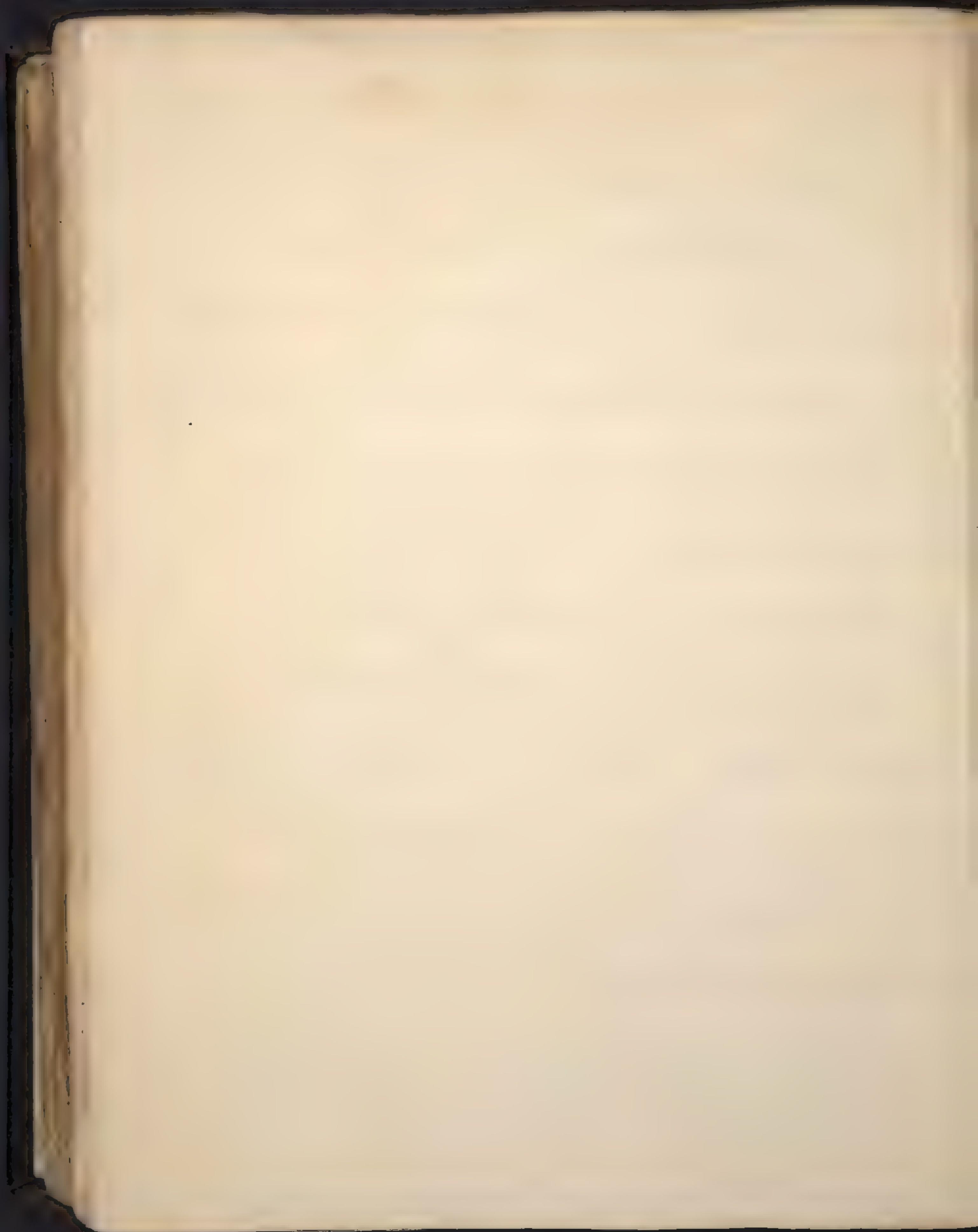
and the jaws so torpid, that it is impossible to administer any medicine. The disease commonly known as tet. Between the muscular & tendinous contracted, and relaxed, and during the relaxation, the motions of the body return to their natural state; by the aid of a skilful practitioner, the patient suffering may be alleviated, and will probably be soon restored to perfect health.

It is a fact admitted by all writers that assimilation and digestion of food is not, at all affected, and in fact every function of the body is unaltered under nearly the course of the disease. An attack of tetanus he earliest case indeed, was once supposed to be incurable; this opinion prevailed among practitioners during the reign of medicine (if you do know the expression). But there are now a great many cases of tetanus cured by medicine injected to be mentioned, and if the science of medicine continues to improve with tact

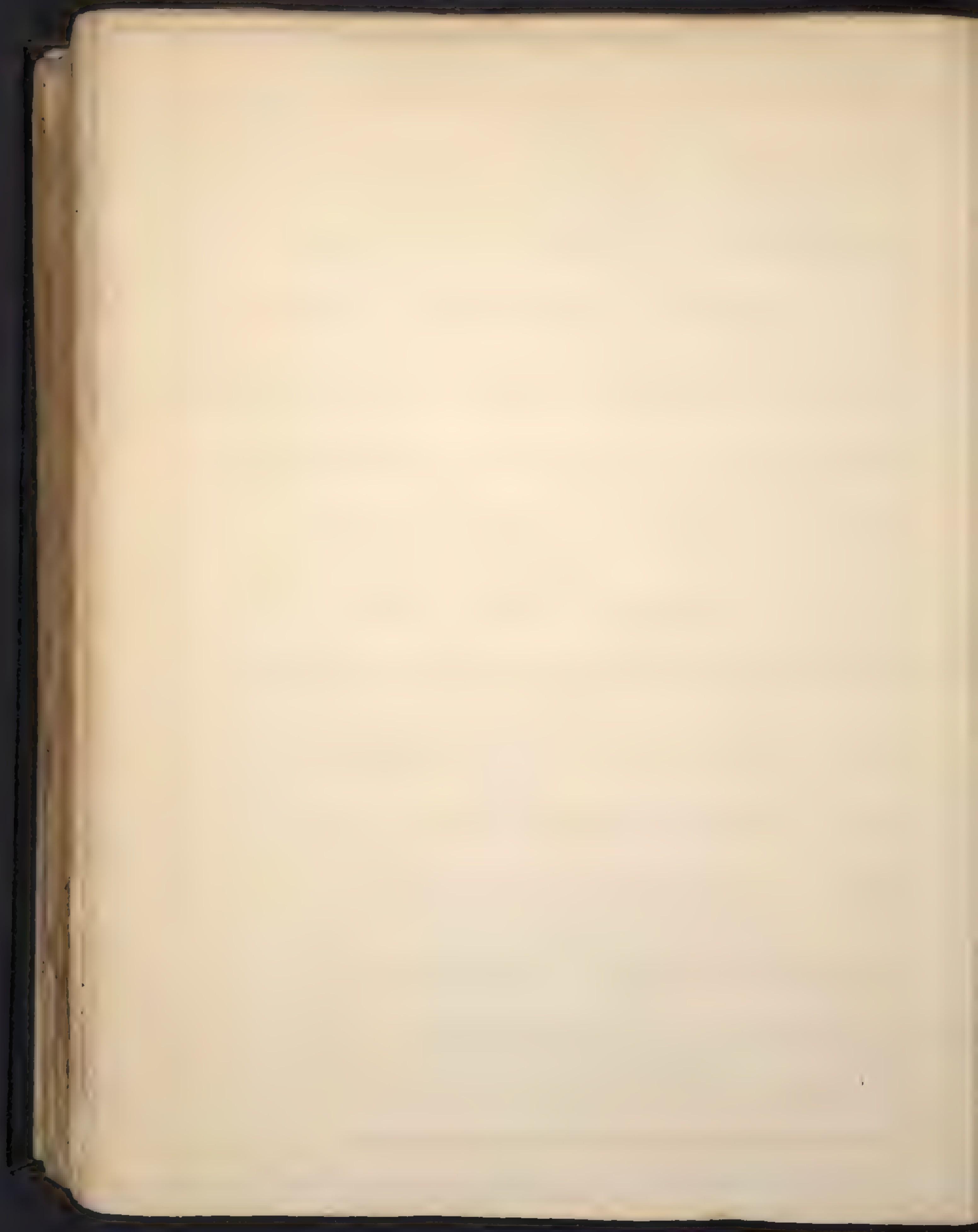


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rapidly with which it has run, or the last time,  
I have not the smallest doubt that it is a disease  
and hence completely under the control of medicine.  
An intermission given, according to my opinion,  
was not wanted and subsisted an hour. But this dis-  
ease was congenital, particularly to the slaves of the  
first batch, if they had reflected but for a moment.  
I could have been at once ~~convinced~~ of the  
accuracy of their statement; the effects of which are  
entirely, more commonly, attributed to their ill  
living after it of course. And it is not in  
accordance with their being a constitutional predisposition.  
But because they are more exposed to the sun, for a  
slavery, and exciting causes of this disease. In the  
immense cases of dissections of negroes who have  
died of this disease, nothing particular has ever  
been discovered, except a small tumor in one few  
cases. There has been no evidence to be considered  
and contradicted. The head, which contains



very, became, by an irony of destiny. Forcing you  
to convert a physician & his disease of Inflammation  
and Disease to enumerate the various causes.  
Firstly, according to tradition; it was once  
believed that a violent action or a violent ex-  
ercise was the main cause of this disease, but the  
theory is exploded, as there are numberless cases  
recorded of attacks of it in a manroughton  
by very indolent inactive and torpid causes, for  
instance the stroke of a cold on the nose, either  
from familiarity, breathing of a musty old man  
who has been known to bring on an attack  
of it's kind. And it can't be attributed to the  
wind, as it's action is not limited to the wind,  
but it's action is also limited, as it does not  
attack the heart, kidneys, lungs and other organs  
unless it be compelled, as it is now, and  
reduced to the right of itself after long festing.  
Tradition also gives another cause of it's  
attack in the mind; Dr Rush maintains that it



saw it brought on by fever in a citizen of Philadelphia.  
This disease is now and then brought on in children,  
by cutting the arm or always from the constant use  
of the microscope retained in the hands, cold applied  
to the body after it has been confined to a hot  
room, and worms in the intestines. When these  
several causes have been abated to the body, they  
do not immediately produce the disease, but  
very frequently require the co-operation of an  
exciting cause to bring on the painful and  
paroxysmic affection in the muscles. Having ta-  
ken the causes of this disease with precision it  
would seem that I ought to ascertain their man-  
ner of operating, but it would be ignorance and  
insensation in me to attempt a theory on this  
subject, which is passed over in silence by  
Dr. Buchan and many other celebrated phys-  
icians, and handled with diffidence by  
Mr. Jeonies; my i<sup>r</sup> unable to do justice to



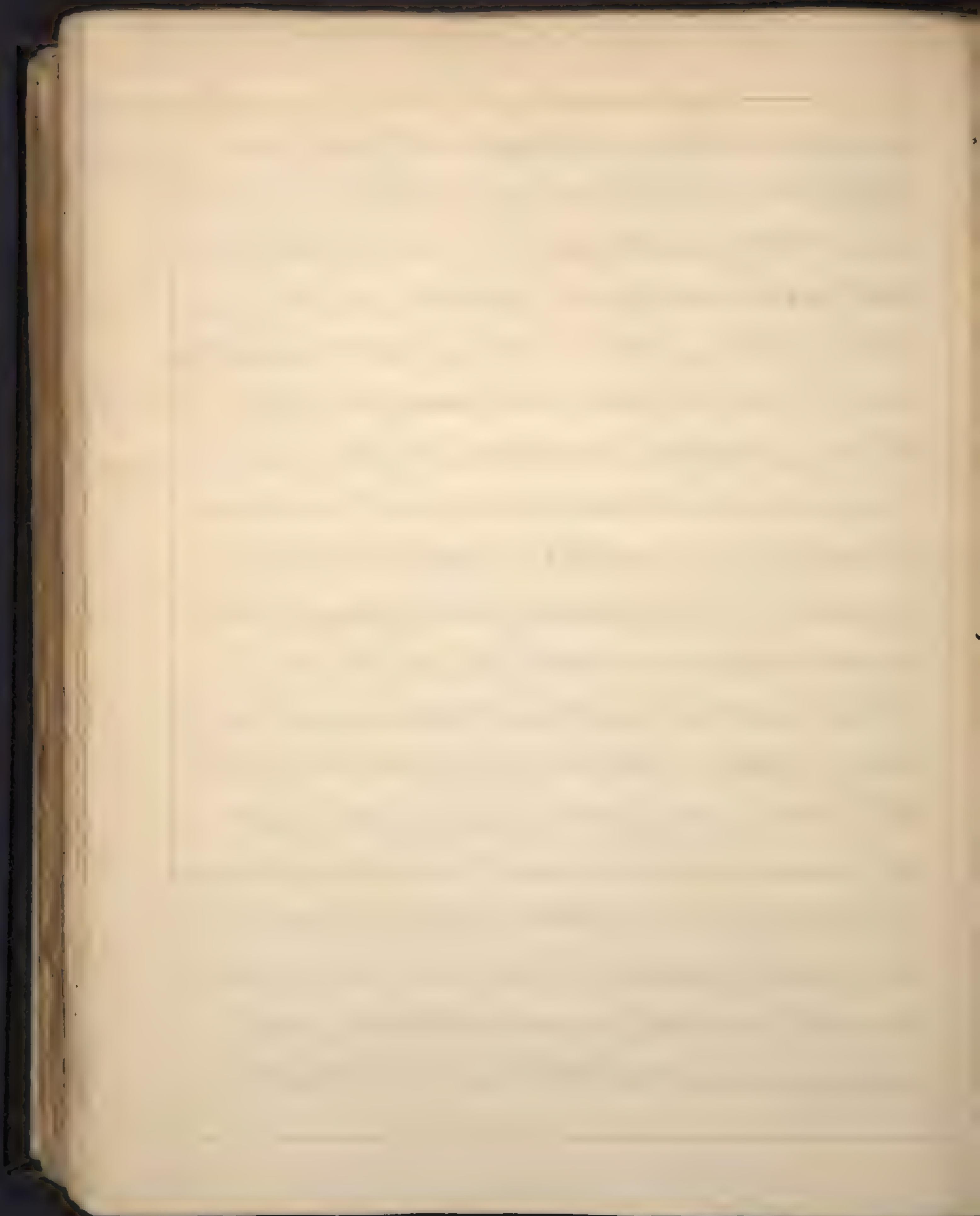
a subject so intricate and obscure as this is; we  
therefore must consign it to some enterprising genus  
of, boscinity, who may present a more accurate  
and satisfactory explanation than the one detailed  
by Dr. Buch in his medical inquiries. It was  
not my intention in treating of this subject to  
have enumerated all the remote and exciting causes  
of Tetany which have been mentioned by medical  
writers, because it would far exceed the limits of  
this essay; I therefore have been as concise as poss-  
ible. It now only remains for me to treat of the  
method of cure. When Tetany is the effect of  
wounds, some practitioners have agreed that the part  
should be removed if convenient, or eroded by  
caustic, so as to distract the communication between  
the wound and sphenonium. If it was possible  
for us to judge from particular appearances of  
a wound, that convulsions would come on, (which  
by the bye is impossible) it would seem that we



might resort to the operation with impunity.  
But those who will read the article I examine  
the different treatises written on the subject, will  
find that amputation has never been practised  
until the same time observed, and that as  
many patients have died after the operation as  
before, and not only this, we know that amputation  
is very frequently one of the causes of this disease.  
These I think are sufficient arguments against  
a practice of this kind. Musk, and Camphor  
have been recommended as beneficial in this  
disease, but experience has proven that they  
are very inefficacious remedies. Those practitioners  
who administered these two remedies, generally  
combined with them, opium, and I am induced  
to believe from late practice, that the salutary  
effects imputed to the Musk and camphor were  
entirely owing to the operation of the opium,  
for I have seen it mentioned, that Musk has

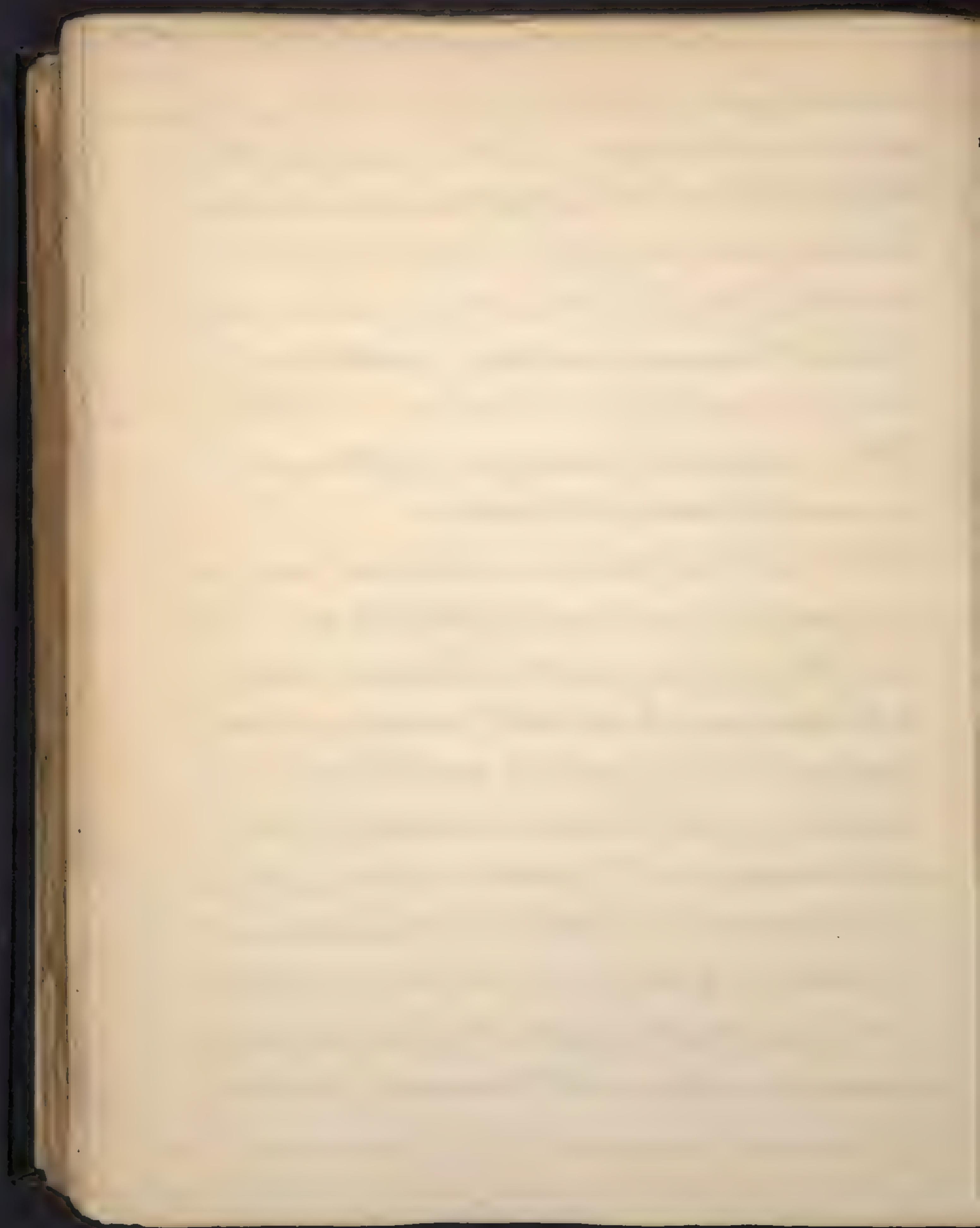


been given to the extent of one hundred and  
fifty grains in the space of twenty four hours  
in an attack of Tetanus, but had not the mo-  
dest effect whatever in lessening or aliv-  
ing the symptoms. Warm bathing has been employed,  
and it was thought with some advantage  
by some writers. But from the facts mentioned,  
it seems to have been attended with no hind-  
rance to advantage, and that it was absolutely  
harmful to the patient. The inefficacy of this  
remedy has been ascribed to the exertion of the  
patient, which he must necessarily undergo in  
taking of the bath, and it has been observed,  
that motion of any kind is very apt to excite  
the spasmodic convulsions. It seems to me to depend  
on something like this, but what I cannot  
pretend to explain. Physicians have frequently  
tried the cold bath in cases of Tetany, with-  
out any good effect. It proved particularly



useful in this disease, in the 3<sup>d</sup> of Dr. Wright. He did not uniformly rule on the cold bath, for there were other remedies given at the same time, but from the authority of this gentleman, the remedy is certainly entitled to a more extensive trial. Dr. Rush mentions that he has witnessed the good effect of this remedy in several attacks of this kind.

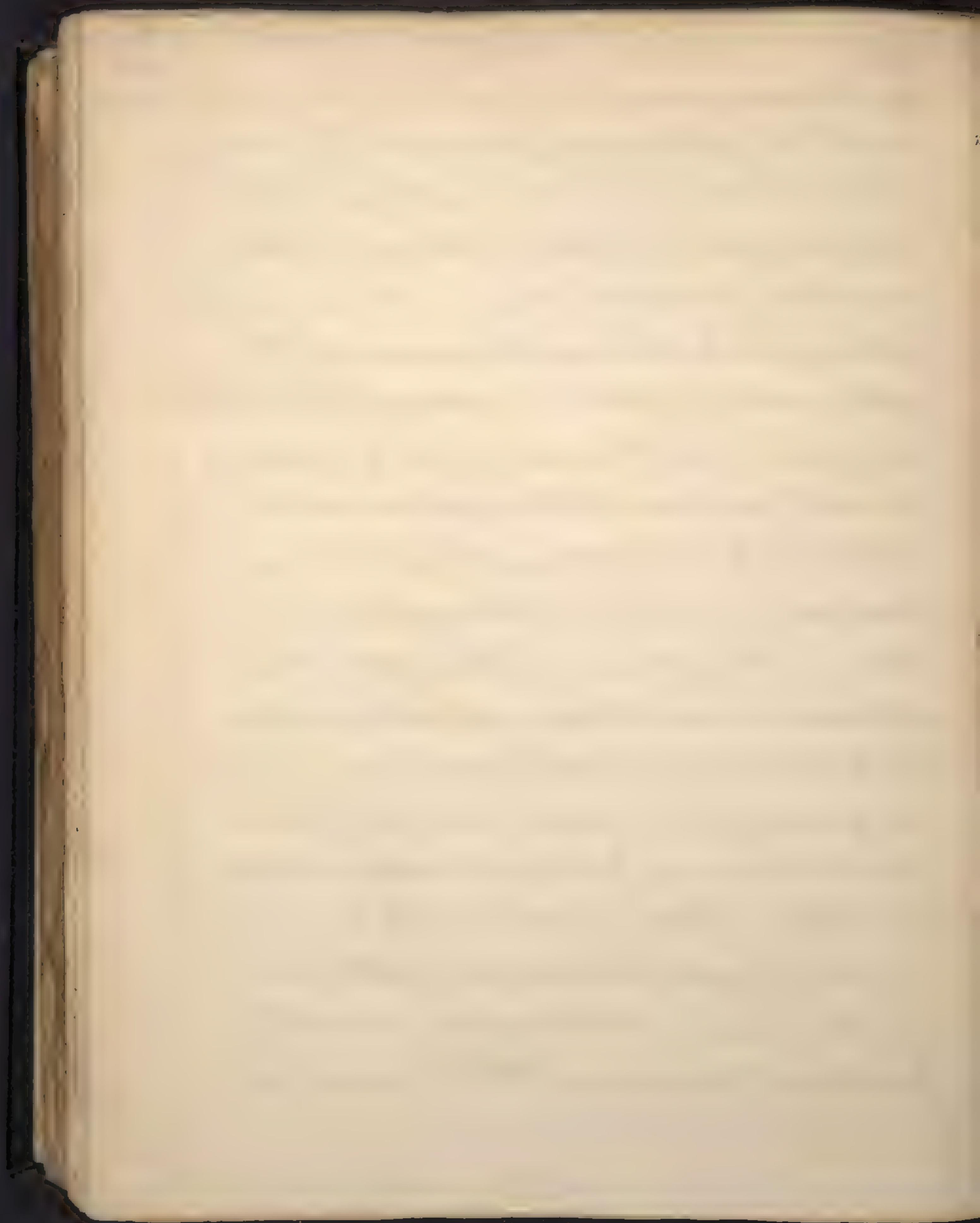
The last and most abhorred method of treating this disease, and remedies principally to be relied on are the following. When the remote causes of the disease can be distinctly discerned, I need hardly say they should if possible be removed immediately, but when vapors or punctures are the causes, and the puncture is not sufficiently large, it should be dilated, and stimulated with its fluids or turpentine, so as to bring on inflammation and healthy suppuration, which prepares us for a favorable termination of this disease.



at the same time, opium is to be of service,  
and that to a very large extent, it is to be  
given in large doses, frequently repeated.  
If from the first dose of opium the convulsions  
give way, the medicine is not to be used again,  
but continued until there is not the smallest  
symptom of the remains of the disease. This  
remedy has been exhibited to an extent, which  
under any other circumstances would have cer-  
tainly destroyed the patient, but not one of  
the deleterious qualities of this medicine has  
been witnessed from its administration  
in tetanus. Dr. Physick prefers to administer  
opium by way of injection, in doses of from  
five to eight grains, repeated at short intervals,  
until the spasms be overcome. It would be  
needful for me to offer any, &c. in support  
of the efficacy of this medicine in this  
disease, for they are innumerable, but will



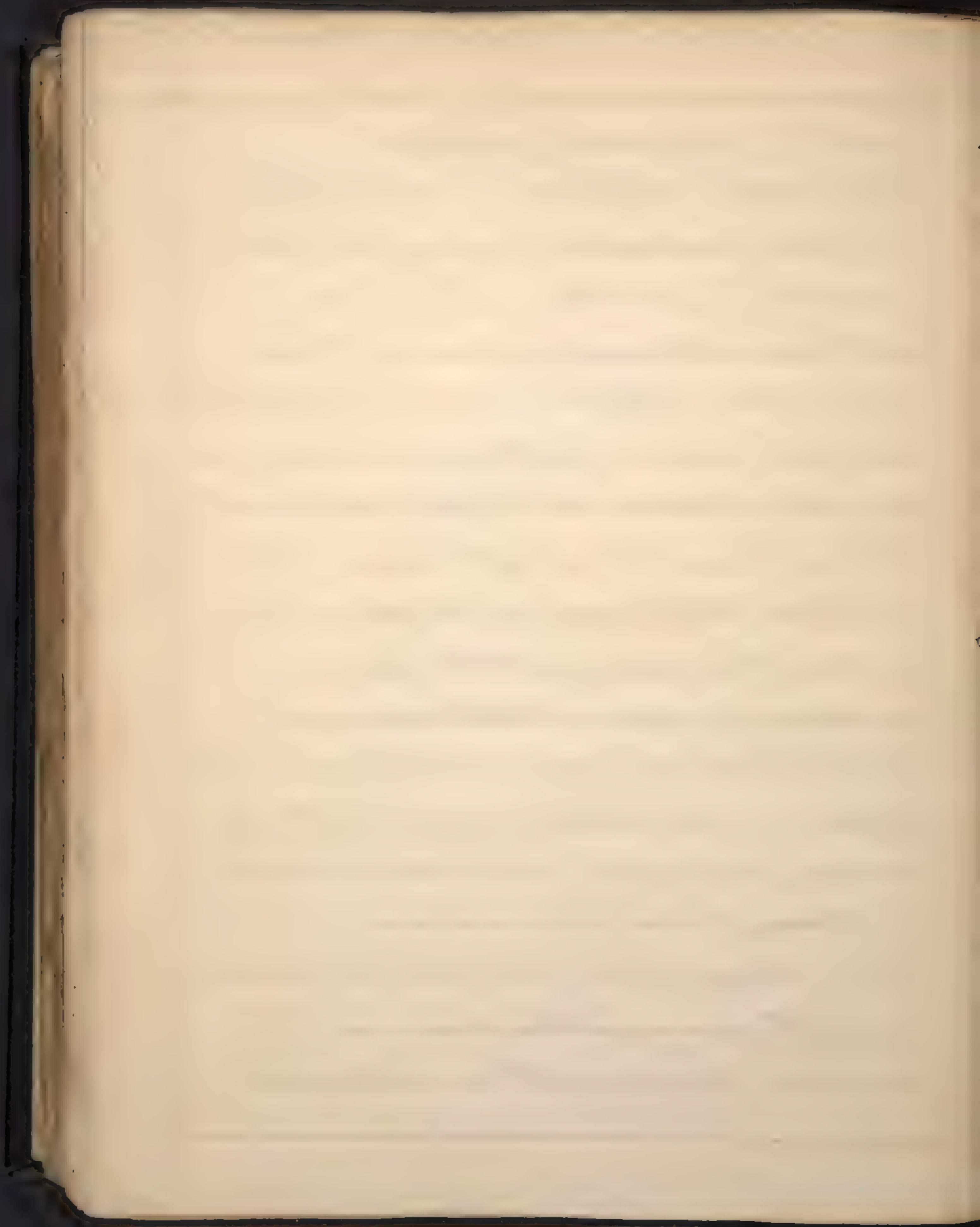
merely state, that opium stands at the head  
of the list of remedies prescribed in this  
peculiar affection. Taught with opium, Balsam  
and Wine are also to be given to a very high  
extent; while the narcotic power of the  
opium seems to relieve the spasms, these two  
medicines act by their tonic effect in giving  
strength and tone to the system, which  
appears to be worn down from the frequent  
spasmodic convulsions. Mercury has been  
tried in this affection with considerable adva-  
ntage when a salivation was excited quickly;  
Would not fumigation with mercury be a means  
of producing salivation immediately? I have  
in the preceding part of this essay stated  
that the functions of organic life were not  
at all interrupted, until nearly the close  
of the disease, and it seems to me probable, by  
this kind of reasoning, that the system



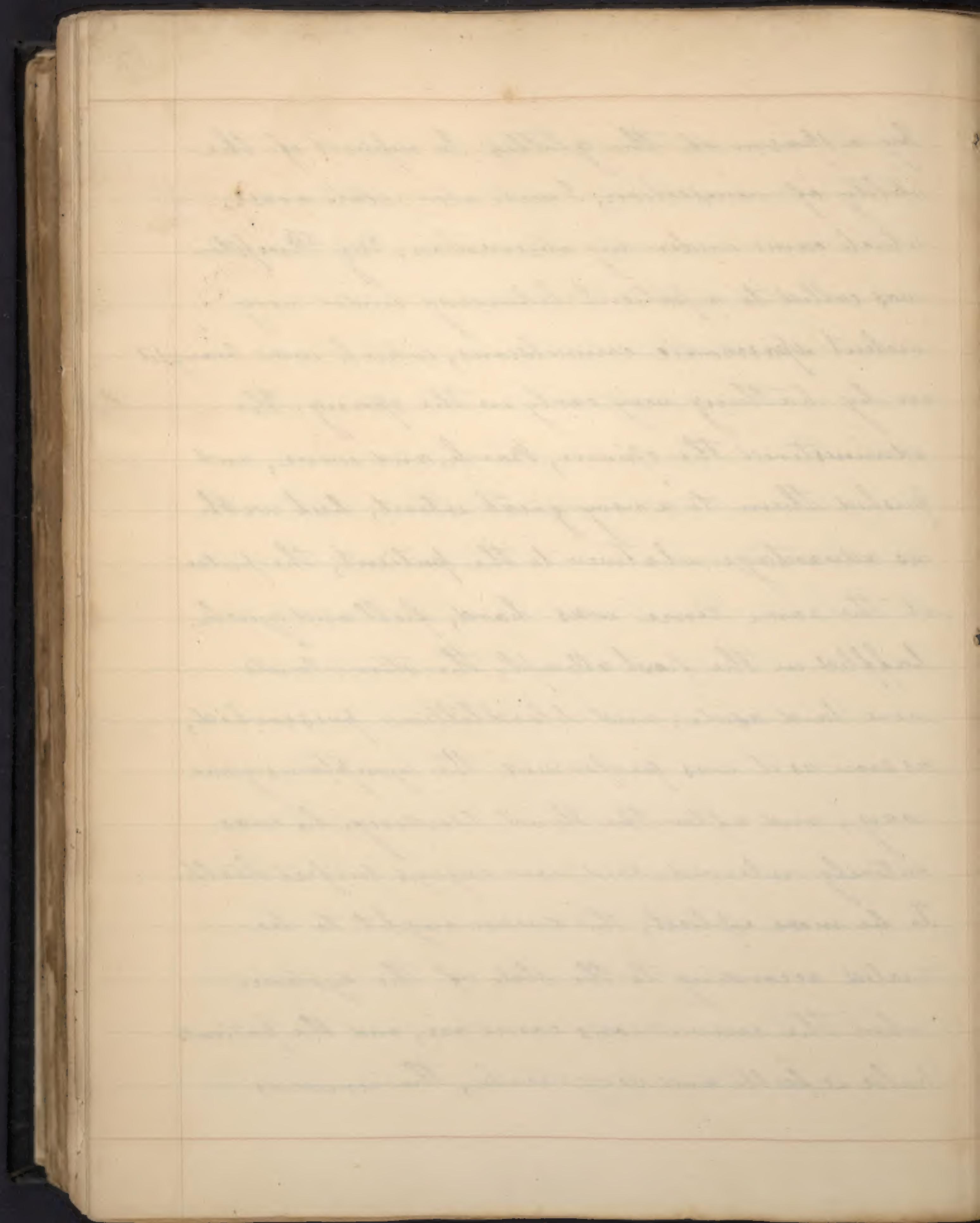
would immediately affect.

without speech and Electricity are recommended in this disease. I am unable to say any thing in behalf of or against their exhibition, but no doubt from the stimulating power of these remedies, they might be advantageously combined with others. I might go on and enumerate many other remedies, but think it useless as you have learned to be methodical, and as I have stated, that it was my intention only to mention those remedies that have been recommended by modern practitioners.

Blood-letting has been recommended by some, and rejected by others; but as I may be allowed to reason from analogy, I see no cause to doubt the efficacy of blood-letting in Tetanus, as it was used in the antient days by none but God-healists, and it is the opinion of the physicians of the present day. But they will terminate, but with



by a spasm of the glottis. In support of the utility of venesection, I will also relate a case which came under my observation; my Preceptor was called to a patient labouring under very violent spasmodic convulsions, which was brought on by bathing very early in the spring. He administered the opium, bark, and wine, and pushed them to a very great extent, but with no advantage whatever to the patient, the pulse at the same time was hard, full and quick, baffled in the first attempt, the stimulants were laid aside, and bloodletting prescribed, as soon as it was performed the symptoms gave way, and after the third bleeding, he was entirely relieved, and now enjoys perfect health. To be more explicit, this disease ought to be treated according to the state of the system, when the convulsions come on, and the patient's pulse is feeble and very weak, the remedies



heretofore recommended are to be employed and pushed to a very great extent; but when the pulse is full, hard, and quick, I see no reason why a vein should not be opened without hesitation.

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